

PATENT APPLICATION OF

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For

New Flip Chip Assemblies and Lamps of High Power GaN LEDs, Wafer Level Flip Chip
Package Process, and Method of Fabricating the Same

ABSTRACT

The present invention discloses new flip chip assemblies and lamps for high power semiconductor chips or devices including GaN LEDs and a new wafer level flip chip packaging process for cost effectively manufacturing the same.

The advantages of the new flip chip assemblies, lamps, and the wafer level flip chip package process are: (1) the fabricating process is simpler; (2) no need for expensive flip chip equipments; (3) the throughput is higher; (4) eliminating lattice mismatch between the substrate and the epitaxial layer by removing the substrate; (5) better thermal dissipation; (6) reduced current crowding effect and higher current density; (7) higher light extraction efficiency; (8) eliminating the totally internal reflection; and (9) eliminating the Fresnel reflection at the dome-air interface.